SINTESIS DAN KARAKTERISASI KATALIS $Mg_{1-x}Zn_xFOH$ SERTA APLIKASINYA PADA REAKSI TRIMETILHIDROKUINON DAN ISOFITOL

Nama : Johanis Paulus Tuli Djawa

NRP : 1414 201 004

Pembimbing : Prof. Dr. rer. nat. Irmina Kris Murwani

Dr. Afifah Rosyidah, M.Si

ABSTRAK

Pada penelitian ini telah disintesis katalis $Mg_{1-x}Zn_xFOH$ melalui metode sol gel dengan x = 0,025; 0,050; 0,075; 0,1 dan 0,15. Karakterisasi struktur kristal dari katalis hasil sintesis dilakukan dengan difraksi sinar-X (XRD), stabilitas termal katalis dengan metode Termogravimetri, Luas permukaan (S_{BET}) katalis diukur dengan metode adsorpsi gas nitrogen, sifat keasaman katalis ditentukan dengan adsorpsi piridin FT-IR. Hasil karakterisasi menunjukkan bahwa katalis $Mg_{1-x}Zn_xFOH$ mempunyai struktur seperti MgF_2 dan stabilitas termal 350 °C. Luas permukaan katalis semakin tinggi seiring bertambahnya variasi doping dengan diameter pori seragam berukuran $\pm$ 3 nm. Rasio keasaman Brønsted dan Lewis hampir sama dicapai pada variasi x = 0,1. Uji katalisis dilakukan pada reaksi trimetilhidrokuinon dan isofitol. Konversi, selektivitas dan *yield* dihitung dari hasil analisis HPLC yang juga menunjukkan kinerja dari katalis. Hasil analisis menunjukkan bahwa katalis $Mg_{1-x}Zn_xFOH$ merupakan katalis yang aktif dan selektif terhadap benzofuran pada reaksi trimetilhidrokuinon dan isofitol. Nilai konversi, selektivitas dan yield optimum dicapai oleh katalis variasi x = 0,1 dengan nilai masing-masing 86,13; 70,75 dan 60,65%.

Kata kunci : Benzofuran, isofitol, $Mg_{1-x}Zn_xFOH$, trimetilhidrokuinon

SYNTHESIS AND CHARACTERIZATION OF $Mg_{-x}Zn_xFOH$ CATALYST AND IT'S APLICATION FOR TRIMETHYLHIDROQUINON AND ISOPHYTOL REACTION

Name : Johanis Paulus Tuli Djawa

NRP : 1414 201 004

Supervisor : Prof. Dr. rer. nat. Irmina Kris Murwani

Dr. Afifah Rosyidah, M.Si

ABSTRACT

This research has been prepared $Mg_{1-x}Zn_xFOH$ catalyst via sol-gel method with x = 0.025; 0,050; 0.075; 0.1 and 0.15. Characterization of the crystal structure of the catalyst synthesized performed by X-ray diffraction (XRD), thermal stability of the catalyst by thermogravimetric method, surface area (S_{BET}) catalyst measured by nitrogen gas adsorption methods, the nature of the catalyst acidity was determined by pyridine adsorption FT-IR. The results showed that the $Mg_{1-x}Zn_xFOH$ catalyst have a structure such as MgF_2 and thermal stability to 350 °C. The higher surface area with increasing doping variation with uniform pore diameter ± 3 nm. The ratio of Brønsted and Lewis nearly as accomplished on the variation x = 0.1. Test carried out on the reaction catalysis of trimethylhydroquinone and isophytol. Conversion, selectivity and yield is calculated from the results of HPLC analyzes were also performed on catalyst. HPLC analysis showed that $Mg_{1-x}Zn_xFOH$ catalyst is an active and selective catalyst in the reaction against benzofuran trimethylhydroquinone and isophytol. The value of the conversion, selectivity and yield optimum is achieved by variation of the catalyst with a value of x = 0.1 respectively 83.13; 72.93 and 60.62%.

Key words : Benzofuran, isophytol, $Mg_{1-x}Zn_xFOH$, *doping* Zn, trimethylhidroquinon.